Your response

Question	Your response
Question 1: Do you have comments on the overall approach to the review?	Confidential? – Y / N In 2.1 of the consultation Ofcom notes: "Use of the radio spectrum benefits every person and organisation in the country. It helps deliver our news, connect us to friends and family, automate factories and support public services. It's used for every type of wireless communication, from TV and radio to the very latest smartphones, and for monitoring our climate and natural environment." In reply to this BEIRG would like to note: On a daily basis PMSE is responsible for the production of content that has received world-wide acclaim and continues to attract a global audience. A vast array of organisations are reliant on spectrum for the production of content for Performing Arts, Broadcasting, News Gathering, Independent Film and TV Production, Corporate Events, Concerts, Night Venues and Sports Events. In addition, other sectors that utilise the current UHF spectrum include the National Health Service, Education, Local Government, Political Programming and Conferencing. Wireless equipment and the spectrum in which it operates are crucial to the British Entertainment and Events Industry, and they are also essential to the very fabric of everyday life in the UK. According to the BVEP UK Events Report published in 2020[1], the overall events and entertainment industry generates in excess of £70bn a year for the UK economy. The PMSE sector plays a significant part in the delivery of all these events – for example arts and cultural, music festivals and events, and sporting events contribute £38.8bn annually. As we have all have witnessed over the past 12 months, all parts of this important industry

[1] BVEP - Business Visits and Events Partnership - BVEP launches report focused on £70bn events industry

	have been sorely missed, and the inability to go to concerts, theatre and major events has been clearly documented to have had a major impact on the lives of the entire UK population. More than ever, we can now clearly understand the importance to the well-being of the country of our creative industries. Moving forward, BEIRG believes, as it always has done, that it is essential to find long term solutions that enables all of these key elements, which are so vitally important to the well-being of the entire population, to continue to function and thrive. In finding these solutions, it is absolutely crucial that, and should therefore in turn be an essential part of, Ofcom's planning for spectrum allocation in the UK should be aligned with partners in the European Union and the rest of the world. Taking a long-term view, with an industry so valuable to the UK population, will in turn allow manufacturers the security of tenure to allow their continued investments into new and more spectrally efficient technologies, something which they have demonstrated so well their ability to do since the start of the changes brought about by the Digital Dividend Review (DDR). BEIRG welcomes the consultation on Spectrum planning, but it is essential that any decisions which are made are in conjunction with sector specific reviews that have and are taking place. BEIRG recognises that Ofcom has identified PMSE as an important sector that justifies its own review alongside other key sectors listed in section 5.4. It is vital that the outputs of sector reviews are cross-referenced with all other sectors. One observation is that in the past, Ofcom have not always looked holistically at spectrum management and we therefore seek assurances that each review will be considered against the wider needs and demands of other sectors under your jurisdiction. For example, to consider how the needs of fixed links or the aeronautical sector impact PMSE.
Question 2: Have we captured the major trends that are likely to impact spectrum management over the next ten years?	Confidential? – Y / N **Vision beyond 2030**

	In light of the widely debated future of DTT, BEIRG questions whether the timeframe of the consultation adequately reflects the potential future changes in spectrum usage. As the results of this consultation will most likely govern spectrum use and needs into the 2030s, there should be greater consideration given to expected demand for spectrum usage beyond this date. **Review of efficiencies in existing allocations** It is important that regulators and governments do not accept without question all of the promises of the International Mobile Telecommunications (IMT) lobby. Many functions of dedicated PMSE technology cannot be replaced by IMT, whether 4G, 5G or whatever. There are some use cases where it is conceivable that IMT could provide services similar to current PMSE equipment, but in the majority of live performance activities there will always be requirements for dedicated technology under the control of the production. There are even applications in live performance where it is still impossible to replace analogue transmission since no digital system has zero latency and even a single millisecond of transmission delay is unacceptable, in some cases with health and safety implications. Decisions on the suitability of a particular technology for PMSE purposes should be made in conjunction with the PMSE community. **Specific spectrum that requires protection and better understanding of current PMSE use and reliance** There is no specific reference to DECT spectrum. The protocol for the 1.9GHz spectrum has been applied to several wireless comms systems that have become the industry default for PMSE in the transition from 700MHz band. The pressure on spectrum available sub 694MHz has rendered it too crowded and too fragmented to accommodate wireless comms systems such as Clear-Com WBS or Telex BTR type systems. As a result systems such as Clear-cm Freespeak II, Green-Go and Riedel Bolero have delivered new technological advancement that avoids both reducing UHF

	spectrum and over congested wifi spectrum and relies entirely on the 1.9GHz DECT area. As this band is applying for IMT2020, Ofcom should be mindful of the impact on the sector should this be considered for other allocations. In addition to the usual issues of shortage of equipment, inability to re-equip etc, this has significant safety implications as the show communications systems are used as a 'mission critical' comms system that ensures reliable, safe productions standards. Therefore, it is important for PMSE that the current DECT band is given due consideration and protection. In addition to the talkback in the traditional PMSE areas of live music touring, broadcast and theatre, DECT is also now used extensively to replace traditional UHF wireless microphone services in many of the less obvious "PMSE" settings such as schools, universities, houses of worship and business meetings. This has cleared considerable numbers of users from UHF spectrum in many towns and cities leaving it available for the more traditional users. Taking the example of a university, many were previously using in excess of 100 UHF wireless microphones across a campus site occupying several TV channels on Sites Specific licences. The majority of these have in most cases now, over the last three or four years, migrated to DECT technology for ordinary teaching spaces, the exceptions being wireless microphones used in performing arts settings where the latency of DECT is unacceptable. Products such as Sennheiser Speechline Digital Wireless, REVOLABS (owned by Yamaha), Shure MICROFLEX, etc. A further use of DECT spectrum is in "Audio for Video" which encompasses everything from news gathering to wedding videos and vlogging and many other activities involving a video camera, or even a cell phone camera or DSLR shooting video. Products such as Sennheiser AVX have again reduced the demand from these activities for UHF spectrum again thereby freeing up the scarce remaining UHF spectrum for the traditional PMSE applications.

Question 3: Could any of the future technologies we have identified in Annex 6, or any others, have disruptive implications for how spectrum is managed in the future? When might those implications emerge?	Confidential? – Y / N Many of the future technologies that Ofcom have identified suggest spectrum sharing as a major factor in this future strategy. We would like to stress the importance of understanding and giving sufficient consideration of the needs of PMSE in this context. PMSE have always been 'good sharers' having spent 40+ years sharing with terrestrial television, and more recently through your own studies and engagement with the PMSE sector, with DME and other Aeronautical Communications and Navigation systems . We can co-exist with current Digital Terrestrial Television (DTT) networks because of the different demands of the two services; (I.e.) high power, high coverage/range (DTT) v low power, low coverage/range (PMSE). We do nonetheless need to be mindful and cautious of the impact on PMSE of new sharing technologies being developed and implemented in the same spectrum as current PMSE usage. As was proven in the context of WSD consultations and the extensive associated works by Ofcom and industry[2] some years ago (Jan & Dec 2013), the protection criteria required by PMSE equipment was found to be prohibitive to the deployment of white space devices within spectrum allocated to PMSE. The work referred to above was carried out using analogue systems in use throughout the industry at that time. In 2016, further tests were carried out[3] to establish sharing potential with Aeronautical DME systems and this work looked at the protection criteria of some of the more recent digital systems that are in use today When Ofcom next considers the viability of technologies for sharing with PMSE, it is essential that the PMSE sector is fully protected. Whilst PMSE supports Ofcom's aim to share spectrum more widely and, as proven, we are already a good sharer, it is likely that we can only share with some technologies. This

[2] Statement (ofcom.org.uk) (page150); Consultation (ofcom.org.uk)
[3] Consultation (ofcom.org.uk); Test Report for the Coexistence of PMSE with Aeronautical Services (ofcom.org.uk); Consultation (ofcom.org.uk)

	perspective is based on current PMSE technologies. Over the course of the DDR, DSO and both 800 and 700 MHz clearance programmes, PMSE have embraced technological developments, become even more spectrally efficient and have demonstrated an ability to adapt to the changing spectrum landscape. BEIRG would support and encourage Government investment in R&D in the sector to promote development of further new technologies for PMSE. For the same reasons that we have discussed on many occasions, the PMSE sector is not in a position to re-equip on a regular basis, and this is only possible with financial Government support. BEIRG would also like to request that Ofcom ensure that the MNO's are required to adapt and demonstrate improved spectrum sharing capabilities. The current coverage plans do not adequately demonstrate this, due to insufficient collaboration between networks, but in order to uphold the underlying principle of efficient spectrum management we feel Ofcom has a duty to ensure this is implemented before further spectrum allocations are made to the MNOs.
Question 4: Do you agree that there is likely to be greater demand for local access to spectrum in the future? Do you agree with our proposal to consider further options for localised spectrum access when authorising new access to spectrum?	Confidential? – Y / N The PMSE community already has significant demand for local spectrum, by virtue of the fact that we access spectrum on a geographically interleaved basis in the UHF bands. We do not have sufficient information to comment on future demand for access to spectrum on a local or national basis in regard to other sectors. However, as mentioned above, operating in interleaved spectrum has demonstrated to PMSE and Ofcom the value of co-ordinated spectrum assignments. For the significant proportion of the PMSE sector that operates in the live environment, it is of paramount importance that we are able to operate with zero interference. The licensed and co-

	ordinated model that exists under the current arrangements offers significant security and protection to our sector. The disparate and specialist nature of the sector means that many businesses and individuals are experts in their field and their reputation relies on a clean, interference-free production.
Question 5: Do you agree with the actual and perceived barriers identified for innovation in new wireless technologies, and our proposed ways of tackling those?	Confidential? – Y / N
Question 6: Do you agree with Ofcom's proposals to improve our outreach and reporting activities, and spectrum information tools? • **Are there additional ways that Ofcom could better engage with existing and future users and providers of wireless communications?** • **Please explain any specific areas where you believe more or better provision of information could provide value to stakeholders**	Confidential? – Y / N Responsible spectrum usage In a world of increased spectrum efficiency, individual frequency allocations become more narrowly spaced. Therefore the impact of one momentary incident of interference becomes significantly greater. In order to raise awareness of this, BEIRG are looking to publish a radio code of conduct for users that will detail safe and responsible working practices. This is intended to increase awareness of the consequences of misuse as well as intentional and unintentional unlicensed usage. BEIRG feels that Ofcom would be well placed to support this industry initiative.
Question 7: Do you agree that it is important to make more spectrum available for innovation before its long-term use is certain? Do you have any comments about our proposed approach to doing this?	Confidential? – Y / N It is important to have spectrum available for innovation and it is important to recognise the need for new technologies to be considered for a trial period to prove the technical viability alongside potential sharers, as well as proving sufficient demand for that technology before making permanent licences and allocations.
Question 8: Do you agree that it is important to encourage spectrum users to be 'good neighbours' to ensure more efficient use of the spectrum? Do you agree with our proposals to: **a) increase realism in coexistence analysis at a national and international level?** **b) encourage spectrum users to be more resilient to interference?**	Confidential? – Y / N Yes We refer you to our response to Q3 Regarding c) we fundamentally do not agree with any measures that reduce the interference protections that licensed co-ordinated use offers as described previously in our answer to Q4.

c) ensure an efficient balance between the level of interference protection given to one service and the flexibility for others to transmit? **Do you have any comments on which of these will be the most important?**	Live production has to maintain interference free performance levels, and there is no likely relaxation on this point which is different to, for example, the general public's broad acceptance of a dropped phone signal for a brief moment. This is the most important point to make in relation to these proposals.
Question 9: Are there any other issues or potential future challenges that should be considered as part of this strategy?	Confidential? – Y / N **Security of tenure** The clearance of both the 800MHz and 700MHz bands has already caused significant disruption to the PMSE sector and despite Government financial support, has negatively impacted the industry over the last 10 years. The industry practices have become even more spectrally efficient and technological developments have helped that too BUT ensuring the sector has reasonable, protected access to sufficient quantity and quality of spectrum is of paramount importance, not only to the affected companies but to the entertainment industry and UK economy as a whole. Therefore, the PMSE sector is looking for some security of tenure and reassurance that this is not to be a 5-7 yearly cycle. We are concerned that there will be another clearance programme, either of 600MHz or of the wider UHF band as more programme delivery becomes IP or satellite based. The upheaval for those who provide content and support our creative industries cannot be over-stated and another move would have a highly damaging impact on the PMSE community. **Spectrum Fees** BEIRG recognises the value of licensed spectrum but it should be recognised that they are a necessary tool for the job, not a business or opportunity cost. There is no direct correlation between the amount of spectrum available/ the amount used per production/ the use of equipment and the economic value that the programme or event generates. Spectrum adds value to the

	economy because of what is allows but should not be priced in such a way. **Shared Licences and Fixed Site Licences** Ofcom should look to improve communications with licensees (and end users who should be licensees) to ensure that the most appropriate licence product is obtained. For example the absence of outdoor annual Fixed Site Coordinated licences for UHF wireless mic users encourages inappropriate use of the Shared UHF licence.
Question 10: Do you agree that continued use of our existing spectrum management tools (as set out in sections 4-7) will be relevant and important for promoting our objectives in the future, in light of future trends?	Confidential? – Y / N Yes
Question 11: Is there anything else we should be considering doing, or doing differently, to promote our objectives?	Confidential? – Y / N